Nuclear Division

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Mitosis

Explain the importance of mitosis in growth, repair and asexual reproduction.

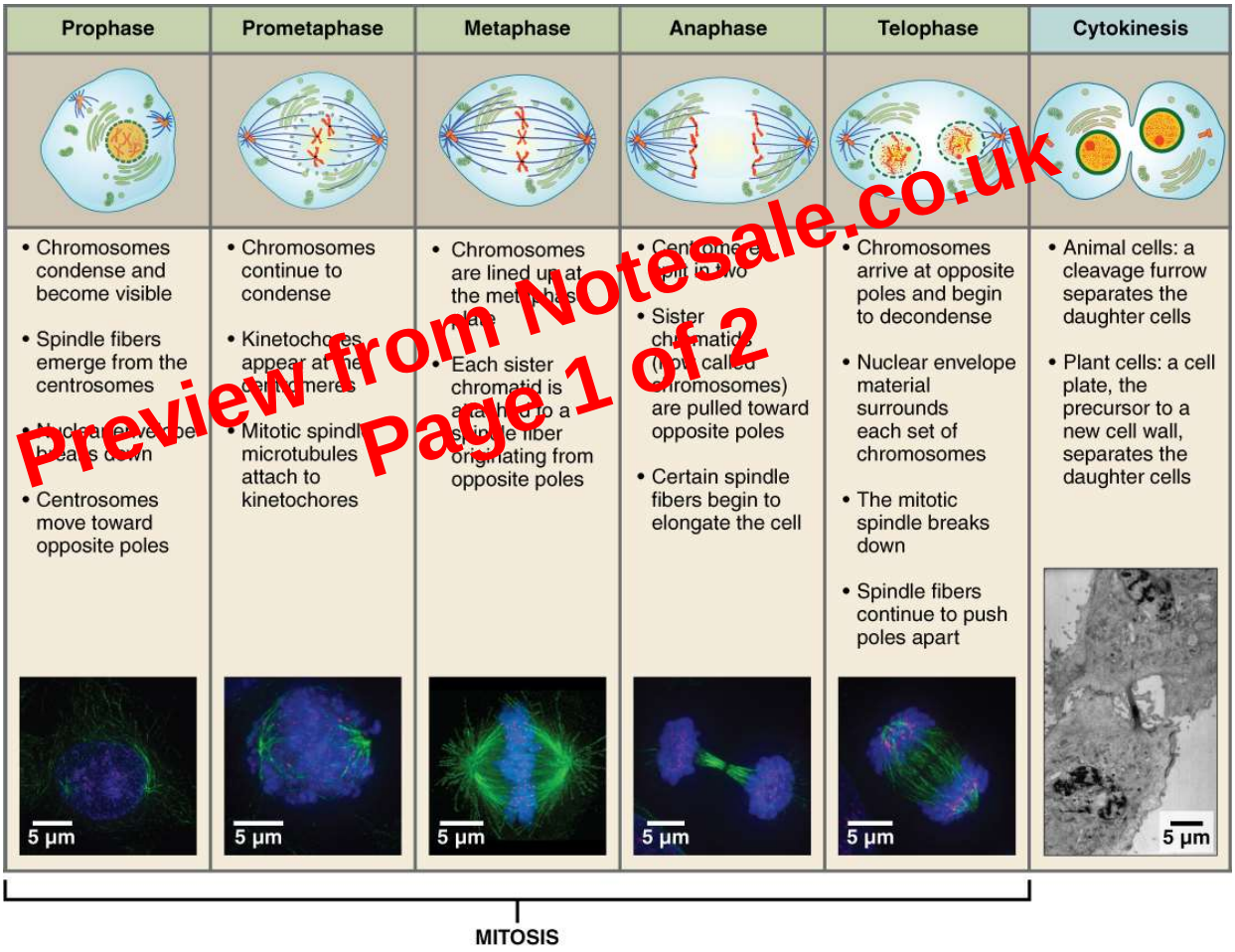
Mitosis results in the formation of two genetically identical daughter cells, a characteristic that is crucial for growth and repair of an organism and asexual reproduction

Need for daughter cells to be genetically identical to parent cell, and hence be able to carry out the same functions as the parent cell to ensure survival of organism

Explain the need for the production of genetically identical cells and fine control of replication.

Mitosis ensures that the **two daughter nuclei formed** contained **genetically identical sets of genetic material** as the parent nucleus, with the **same number of chromosomes** and the **same genetic make-up**. This is to ensure the **daughter cells will be genetically identical to the parent cell**. This maintains the **genetic stability** of an organism.

Describe with the aid of diagrams, the behaviour of chromosomes during the mitotic cell cycle and the associated behaviour of the nuclear envelope, cell membrane and centrioles. (Names of the main stages are expected)



Meiosis

Explain what is meant by homologous pairs of chromosomes.

A homologous pair of chromosomes are any two chromosomes that determine the same characteristics in an organism. They are of the same size with centromeres at the same position with identical sequences of loci, and pair with each other during Prophase I of meiosis.